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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| EXAMINER |
|---|
| KRECK, JOHN J |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

DATE MAILED: 01/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/841,302 | Applicant(s) ROUFFIGNAC ET AL. |
|---|---|---|
| | Examiner John Kreck | Art Unit 3673 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *4091-4170 and 5396* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4091-4115,4117-4170 and 5396* is/are rejected.

7)☒ Claim(s) *4116* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *3/4/02* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8-15.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 3673.

The amendments dated 10/4/01 and 3/4/02 have been entered.

Claims 4091-4170, and 5396 are pending in this application.

An interview was conducted with Eric Meyertons on 8/19/02 for a related application. During this interview, it was determined that applicant's definition of hydrocarbons was meant to include fossil fuels; which may also include oxygen, nitrogen, or sulfur in their molecular structures; but not to include minerals such as trona. Although this definition is somewhat broader than the generally accepted chemist's definition; it generally corresponds to the definition in the petroleum industry. It was also agreed that "at least about 7" heat sources per production well is meant to give some flexibility where large numbers of production wells are used, and the "about" was not meant to apply to the case of a single production well. It was also determined that applicants' definition of "non-condensible hydrocarbon" also applies to "non-condensible component".

### *Specification*

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the specification.

***Drawings***

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 3/4/2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 4091-4170 and 5396 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over copending applications (including the present application): 09/840,936; 09/840,937; 09/841,000; 09/841,060; 09/841,061; 09/841,127; 09/841,128; 09/841,129; 09/841,130; 09/841,131; 09/841,170; 09/841,193; 09/841,194; 09/841,195; 09/841,238; 09/841,239; 09/841,240; 09/841,284; 09/841,285; 09/841,286; 09/841,287; 09/841,288; 09/841,289; 09/841,290; 09/841,291; 09/841,292; 09/841,293; 09/841,294; 09/841,295; 09/841,296; 09/841,297; 09/841,298; 09/841,299; 09/841,300; 09/841,301; 09/841,302; 09/841,303;

09/841,304; 09/841,305; 09/841,306; 09/841,307; 09/841,308; 09/841,309; 09/841,310; 09/841,311; 09/841,312; 09/841,429; 09/841,430; 09/841,431; 09/841,432; 09/841,433; 09/841,434; 09/841,435; 09/841,436; 09/841,437; 09/841,438; 09/841,439; 09/841,440; 09/841,441; 09/841,442; 09/841,443; 09/841,444; 09/841,445; 09/841,446; 09/841,447; 09/841,448; 09/841,449; 09/841,488; 09/841,489; 09/841,490; 09/841,491; 09/841,492; 09/841,493; 09/841,494; 09/841,495; 09/841,496; 09/841,497; 09/841,498; 09/841,499; 09/841,500; 09/841,501; 09/841,502; 09/841,632; 09/841,633; 09/841,634; 09/841,635; 09/841,636; 09/841,637; 09/841,638; and 09/841,639.

37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. The discussion below sets forth the Office's basis for its determination that each of these ninety applications contains at least one claim that conflicts with another one of the related co-pending applications identified above. Each of these ninety applications includes the same specification and collectively these ninety applications present over five thousand claims. The Office has shown that each of these ninety applications contains at least one claim that conflicts with another one of the related co-pending applications identified above, and an analysis of each of five thousand claims in the ninety related co-pending applications would be an extreme burden on the Office requiring tens of thousands of claim comparisons. Therefore, the Office is requiring applicant to resolve the conflict between these applications and comply with 37 CFR 1.78(b) by either:

(1) filing a terminal disclaimer in each of the related ninety-one applications terminally disclaiming each of the other ninety applications; or,

(2) provide a statement that all claims in the ninety applications have been reviewed by applicant and that no conflicting claims exist between the applications. Such a statement must set forth factual information to identify how all the claims in the instant application are distinct and separate inventions from all the claims in the above identified ninety applications.

See MPEP 804.02 IV for a discussion of multiple double patenting rejections and the requirements for a single terminal disclaimer.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

**The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

2. Claims 4094, 4109, 4111, 4150, and 4166 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4094 and 4111 are unclear regarding the "surface burner". It is unclear how a surface burner can be disposed in an open wellbore.

Claims 4105 and 4150 recite the limitation "wherein controlling conditions comprises". There is insufficient antecedent basis for the step of controlling in the claims.

Claim 4166 is unclear regarding the "heater element". It is unclear whether this is different from the previously claimed "heat source".

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 4091, 4093, 4098, 4100-4102, 4104, 4107, 4110, 4114, 4115, 4117, 4119, 4121, 4122, 4129, 4154, 4155, and 4167 are rejected under 35 U.S.C. 102(b) as being anticipated by Camacho, et al. (U.S. Patent number 4,067,390).

Camacho shows a system configured to heat a coal formation comprising a heat source in an open wellbore as called for in claim 4091.

Camacho also shows the electrical heater as called for in claim 4093.

Camacho also shows the overburden casing (17) as called for in claim 4097.

Camacho also shows the overburden casing disposed in cement (21) as called for in claim 4100.

Camacho also shows the overburden casing and packing material (cement- 21) as called for in claim 4101.

Camacho also shows the overburden casing and packing material (cement- 21) configured to inhibit fluid flow as called for in claim 4102.

Camacho also shows the system configured to transfer heat so that hydrocarbons can be pyrolyzed as called for in claim 4104.

Regarding independent claim 4107:

Camacho teaches a method of treating a coal formation including the steps of providing heat from one or more heat sources disposed within open wellbores in the formation (figure 2) allowing heat to transfer, and producing a mixture (abstract line 2) as called for in claim 4107.

Camacho also shows the electrical heater as called for in claim 4110.

Camacho also shows the tube (18) and the providing a substantially flow of fluid (steam) through critical flow orifices (shown in fig 2 near 25) as called for in claim 4115.

Camacho also shows the overburden casing (17) as called for in claim 4117.

Camacho also shows the overburden casing disposed in cement (21) as called for in claim 4119.

Camacho also shows the overburden casing and packing material (cement- 21) configured to inhibit fluid flow as called for in claim 4121.

Camacho also shows the heating to pyrolyze as called for in claim 4122.

With regards to claim 4129; the Camacho reference does not explicitly teach the transferring by conduction; however this is inherent in a solid substance such as coal.

With regards to claims 4154 and 4155; the Camacho reference does not explicitly teach the increasing permeability; however this is inherent in a process of heating coal.

Camacho also shows the heating to a minimum temperature of 270°C as called for in claim 4167.

4. Claims 4091, 4092, 4096, 4103, 4107, 4108, 4113, 4120, 4124, 4146, 4150, 4152, 4156, 4157, 4158, 4159, 4160, 4161, 4162, 4163, 4164, 4166, and 5396 are rejected under 35 U.S.C. 102(b) as being anticipated by Terry (U.S. Patent number 4,093,025).

Terry teaches a system configured to heat a coal formation comprising one or more heat sources (10) disposed within one or more open wellbores (see figure 4), wherein the system is configured to allow heat to transfer as called for in claim 4091.

Terry also shows at least two heat sources as called for in claim 4092, the superposition is inherent.

Terry also shows a natural distributed combustor as called for in claim 4096.

Terry also shows the overburden casing and packing material comprising cement at the junction between the open bore and the casing as called for in claim 4103.

Regarding independent claim 4107:

Terry teaches the method of treating a coal formation comprising providing heat from one or more heat sources, wherein the heat sources are disposed in open wellbores, allowing heat to transfer and producing a mixture as called for in claim 4107.

Terry also shows at least two heat sources and teaches the pyrolyzation as called for in claim 4108, the superposition is inherent.

Terry also shows a natural distributed combustor as called for in claim 4113.

Terry also shows the overburden casing and packing material comprising cement at the junction between the open bore and the casing as called for in claim 4120.

Terry also teaches controlling the pressure as called for in claim 4124.

Terry also teaches controlling the pressure as called for in claim 4146.

Terry also teaches the recirculating hydrogen as called for in claim 4150.

Terry also teaches the providing hydrogen as called for in claim 4152; the heating is inherent.

With regards to claim 4156; the yield of greater than 60% is inherent.

Terry also shows at least about 7 heat sources as called for in claim 4157.

Terry also shows at least about 3 heat sources in a triangular pattern as called for in claim 4158.

Terry also shows at least about 3 heat sources in a repeating triangular pattern as called for in claim 4159.

Terry also shows the liquid and gas stream as called for in claim 4160.

Terry also shows the liquid and gas stream, and the aqueous and non-aqueous streams as called for in claim 4161.

Terry also shows the separating H2S as called for in claim 4162.

Terry also shows the separating CO2 as called for in claim 4163.

Terry also shows the mixture produced as vapor as called for in claim 4164.

Terry also shows the heater element in the production well as called for in claim 4166.

Terry also shows the at least 20 heat sources as called for in claim 5396.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4097, 4099, 4118, 4130-4145, 4147-4149, and 4153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry.

Terry teaches all of the limitations of claims 4091 and 4107, from which these claims depend.

With regards to claim 4097; Terry fails to teach the diameter of the wellbore. It is well known to make such wellbores greater than 5 cm; in order to allow for high volume production; it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included a wellbore diameter of at least 5 cm as called for in claim 4097, in order to allow for high volume production.

With regards to claims 4099 and 4118; Terry fails to teach the steel casing. It is well known to make such casing from steel; because it is durable; it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included a steel casing as called for in claims 4099 and 4118, because it is durable.

With regards to claim 4130; most coals have a thermal conductivity of less than 5.0 W/m°C; thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Terry invention in a coal with a thermal conductivity of less than 5.0 W/m°C, as called for in claim 4130.

With regards to claims 4131-4144, 4148, and 4149; the nature of hydrocarbons produced from such heating is highly variable, and dependent upon many factors, not least of which is the characteristics of the coal. The components of the produced mixture are deemed to be the results of design variables, including coal characteristics and temperature.

With regards to claim 4145; Terry teaches the ammonia, but fails to teach the fertilizer. It is well known to make fertilizer from ammonia; because it has a high nitrogen content; it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included a production of fertilizer, as called for in claim 4145.

With regards to claim 4147; Terry fails to explicitly teach the pressure greater than 2.0 bar, but teaches that the pressure should be greater than hydrostatic head. It is well known that the hydrostatic head in many coal seams is greater than 2.0 bar; thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry invention to have the pressure greater than 2.0 bar as called for in claim 4147.

With regards to claim 4153; Terry fails to teach the hydrogenating produced hydrocarbons with produced hydrogen. It is well known in the art of refining to

hydrogenate produced hydrocarbons; in order to obtain desirable products. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included hydrogenating produced hydrocarbons with produced hydrogen as called for in claim 4153; in order to obtain desirable products; the use of produced hydrogen would be obvious because hydrogen is a fungible commodity.

6. Claims 4091 and 4107 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tsai, et al. (U.S. Patent number 4,299,285).

Tsai shows a system configured to heat a coal formation comprising a heat source in an open wellbore as called for in claim 4091. Note that although Tsai does not explicitly disclose the wellbore as "open"; it must necessarily be open in order to allow the hot air to flow into the formation. Alternatively, if it is deemed that Tsai does not anticipate the open wellbore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Tsai method to have included an open wellbore, in order to allow for unimpeded flow of hot air.

Regarding independent claim 4107:

Tsai teaches a method of treating a coal formation including the steps of providing heat from one or more heat sources disposed within open wellbores in the formation allowing heat to transfer, and producing a mixture as called for in claim 4107. Note that although Tsai does not explicitly disclose the wellbore as "open"; it must

necessarily be open in order to allow the hot air to flow into the formation. Alternatively, if it is deemed that Tsai does not anticipate the open wellbore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Tsai method to have included an open wellbore, in order to allow for unimpeded flow of hot air.

7. Claims 4094 and 4111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai, et al. (U.S. Patent number 4,299,285).

Claims 4091 and 4107 are anticipated or obvious over Tsai, et al. as set forth above. Tsai discloses the injection of hot air, but does not describe how the air is heated, and thus fails to explicitly disclose the surface burner.

It is old and well known to use surface burners (e.g. furnaces) to heat air. Surface burners are the oldest and most common method of heating air. Surface burners are used because they provide for efficient heating of air. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Tsai method to have included surface burner as called for in claims 4094 and 4111, in order to efficiently heat the air.

8. Claims 4095 and 4112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Bennett (U.S. Patent number 3,680,633).

Terry teaches all of the limitations of claims 4091 and 4107; from which these claims depend.

Terry fails to explicitly disclose the flameless distributed combustor.

Bennett teaches that a flameless distributed combustor is used in a similar process in order to initiate in-situ combustion; the Bennett method is disclosed as being efficient at initiating combustion.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included a flameless distributed combustor, as called for in claims 4095 and 4112, and as taught by Bennett, in order to efficiently initiate combustion.

9. Claims 4105, 4106, 4125, and 4126 are rejected under 35 U.S.C. 103(a) as being unpatentable over Camacho.

Camacho teaches all of the limitations of claims 4091 and 4107, from which these claims depend.

Camacho teaches the desirability of controlling the pressure but fails to teach how the pressure is controlled. The most common way to control pressure is to use valves; thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Camacho system to have included a valve as called for in claim 4105, 4106, 4125, and 4126, in order to control the pressure.

10. Claim 4123 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Elkins U.S. Patent number 2,734,579).

The Terry reference fails to teach the controlling the temperature and pressure wherein the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature.

Elkins teaches controlling the pressure in order to lower the temperature (col. 3, line 46); this is done in order to help prevent overheating. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry process to have included the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature as called for in claim 4123, and as taught by Elkins, in order to prevent overheating.

11. Claims 4127 and 4128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Kasevich, et al. (U.S. Patent number 4,457,365).

The Terry reference fails to teach the heating rate. With regards to claim 4128; it is known to heat at rates of less than 10°C per day, as shown by Kasevich (figure 3). It is apparent that this low heating rate is desirable because it results in more uniform heating, and reduces the possibility of hot spots. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included heating at a rate of less than about 10°C per day as called for in claim 4128, in order to achieve more uniform heating. The claim limitations drawn to the heating energy are nothing more than well known thermodynamic equations.

With regards to claim 4127; it is noted that Kasevich teaches an average of approximately 1.6°/day. It is apparent that when the temperature reaches its highest

point (the point at which pyrolysis occurs) the rate of increase would be at the slowest; thus it would be less than about 1°C/day. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included heating at less than about 1°C/day during pyrolysis as called for in claim 4127; in order to achieve more uniform heating.

12. Claims 4151, 4168, 4169, and 4170 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gregoli, et al. (U.S. Patent number 6,016,867).

The Terry reference fails to teach the altering pressure to inhibit production of hydrocarbons having carbon numbers greater than about 25. The Gregoli reference teaches that in a similar in-situ processes, it is beneficial to use high pressure to break heavy hydrocarbons. It is well known that carbons having carbon numbers greater than about 25 are considered to be heavy; and impede production because they are dense and viscous. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included altering pressure to inhibit production of hydrocarbons having carbon numbers greater than about 25, as called for in claim 4151, in order to improve production.

With regards to claim 4168; it would have been obvious to one of ordinary skill in the art at the time of the invention to modified the Terry method to have controlled the pressure to be greater than 2.0 bar to inhibit production of hydrocarbons having carbon numbers greater than about 25, as called for in claim 4168, in order to improve production.

With regards to claims 4169-4170; Gregioli teaches the increasing pressure to inhibit production of heavy hydrocarbons; thus also implicitly teaching decreasing pressure to increase heavy hydrocarbons. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included controlling pressure to control production of condensable hydrocarbons as called for in claim 4169 or to control the API gravity of hydrocarbons as called for in claim 4170.

13. Claims 4109 is rejected under 35 U.S.C. 103(a) as being unpatentable over Camacho in view of Tsai, et al. (U.S. Patent number 4,299,285)

Camacho fails to teach the maintaining temperature within a range of about 250 to 400°C.

Tsai teaches a method of increasing permeability in order to prepare for in-situ gasification. The Tsai method includes maintaining temperature within a range of about 250 to 400°C.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Camacho method to have included the method of increasing permeability taught by Tsai, and thus to have included maintaining temperature within a range of about 250 to 400°C as called for in claim 4109, in order to improve the in situ gasification process.

14. Claim 4165 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Parry (U.S. Patent number 48,994).

Terry fails to teach the heater.

Parry teaches the use of heaters to prevent condensation in production wells.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Terry method to have included heating the production well to prevent condensation, as called for in claim 4165, as taught by Parry.

***Allowable Subject Matter***

15. Claim 4116 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on M-F 6:00 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3597 for regular communications and (703)305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-4177.

John Kreck
Examiner
Art Unit 3673

JK
1/21/03